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TECHNOLOGY UTILIZATION IN A NON-URBAN REGION: FURTHER IMPACT AND TECHNIQUE OF THE TECHNOLOGY USE STUDIES CENTER (5)

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FINAL REPORT, NASW-2502

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TECHNOLOGY USE STUDIES CENTER
SOUTHEASTERN STATE COLLEGE
DURANT, OKLAHOMA 74701

JUNE 1974

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FINAL REPORT, NASW-2512

TECHNOLOGY USE STUDIES CENTER
SOUTHEASTERN STATE COLLEGE
DURANT, OKLAHOMA 74701

JUNE 1974

ACKNOWLEDGMENTS

As a routine practice and policy of the Technology Use Studies Center, all of the Center personnel, in one way or another, participate in the preparation of various status reports--this annual report of work accomplishments, services, etc., is no exception. The planning and preparation of the report has been a team effort.

With regard to the detail and written content of the report, Mr. Bill Dodd, Industrial Specialist, and Mrs. Velma Dittmar, Administrative Assistant and Secretary, deserve special recognition.

Other TUSC personnel who provided valuable assistance in preparing the report include A. M. Moore, Senior Industrial Specialist; Rick Billingsley, Jeran Binning, Bob Brewer, Donita Duke, and Byron Wallace, Information Retrieval Assistants; and Veleta Coleman, Brenda Futrell, Barbara Miles, Judy Moseley, and Susan Norris, Clerical Assistants. Mr. Moore's understanding of the TU Program and his tenure with TUSC makes him a valuable resource and consultant in preparing a report such as this one. Mr. Brewer, a graduate of the 1974 Class, deserves recognition and credit for his diligent search effort concerning requests pertaining to the field of electronics.

The College Print Shop personnel and manager, Cecil Sullivan, as always have been most helpful in the printing function as related to the production of the finished report.

C. Henry Gold
June 1974

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SUMMARY

NASA Contract NASW-2512 requires that the Technology Use Studies Center (TUSC) submit a Final (annual) Report as set forth in Article III.

As in previous annual reports, Chapter I provides the reader with updated information pertaining to TUSC clients who are those that receive/use information as disseminated by the Center. The client information is presented as a continuation of client data as set forth in the Center's previous annual reports.

NASW-2512 contract year ended May 31, 1974--the quarterly status report (QSR) requirement has been complied with. Three reports (QSR #33, 34, and 35) have been submitted per contract specifications. By Supplemental Agreement, TUSC Contract NASW-2379 was extended to June 8, 1973; therefore, QSR #33 provides a record of accomplishment from June 9, 1973, to September 30, 1973. Likewise, this Annual Report is a record of TUSC accomplishments dating from June 9, 1973, to May 31, 1974. Since QSR #35 gives a status report through March 31, 1974, this report will cover the remaining months of April and May 1974; it summarizes TUSC services and Technology Utilization Program efforts/accomplishments during the contract year.

Chapters II, III, and IV correspond with our Statement of Work as provided in Article I; namely, Dissemination and Assistance, Faculty Information Service, and Cooperation with Other Agencies.

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CHAPTER I

TUSC CLIENTELE INFORMATION

For the purpose of defining terms, the Center has used the term "client" to mean firm, agency, or individual/s with whom there has been an information interchange. In other words, a client is anyone who has requested (and received) information or a service of TUSC.

As mentioned in the preceding report Summary, this chapter is actually a continuation of client information that has been reported in previous Annual Reports. Tables I, IV, and VI identify the TUSC classification of its clientele; i.e., Firm, Individual, and/or Special. Special Clients include research organizations and local, state, or federal governmental agencies. TUSC services are heavily utilized by the Small Business Administration in connection with its TU Program and search for information. The Center's excellent relationship and dialogue with the Dallas, Texas, Regional Office, as reported in our 1973 Annual Report, has continued throughout this contract year--several SBA searches have been accomplished at the request of SBA's Oklahoma City representative.

From the standpoint of effective information dissemination, this Center views the NASA-SBA cooperative interchange as a most healthy TU partnership arrangement. The highest levels of government should suggest and encourage the inter-governmental, cooperative aspect of the nation's Technology Utilization Program.

TABLE I

NUMBER OF TUSC CLIENTS BY CLASSIFICATION AND YEAR

Year	Firms	Special	Individuals
1964	9	--	--
1965	21	--	8
1966	58	--	19
1967	77	--	29
1968	99	10	68
1969	133	19	100
1970	154	35	136
1971	165	37	176
1972	171	44	222
1973	175	48	241
1974*	182	55	273

*Includes only the period from January 1, 1974 - May 31, 1974.

TABLE II

TUSC CLIENT FIRMS, BY NUMBER OF EMPLOYEES

Number of Employees	Number of Firms
Below 25	104
25-49	23
50-99	24
100-249	13
250-499	9
500 and over	9
TOTAL	182

TABLE III

COMPOSITION OF TUSC CLIENT FIRMS, BY TYPE OF FIRM

Item	Number
Services	44
Mining	3
Manufacturing	135
TOTAL	182

TABLE IV

TUSC CLIENTS BY GEOGRAPHIC LOCATION

	Firms	Individuals	Special
Oklahoma Project Area (19 counties)	106	192	29
Remainder of Oklahoma	48	31	12
Texas Project Area (15 counties)	9	19	1
Remainder of Texas	10	21	4
Other States	9	10	9
TOTAL	182	273	55

NOTE: A map of TUSC's Project Area is included as Appendix A.

TABLE V

MANUFACTURING FIRMS BY SIC CLASSIFICATION*

Two Digit SIC Classification		Number of Clients
13	Crude Petroleum and Natural Gas	2
19	Ordnance and Accessories	0
20	Food and Kindred Products	7
22	Textile Mill Products	1
23	Apparel and Other Finished Products Made from Fabrics and Similar Materials	4
24	Lumber and Wood Products, except Furniture	5
25	Furniture and Fixtures	4
26	Paper and Allied Products	4
27	Printing, Publishing and Allied Products	2
28	Chemical and Allied Products	5
29	Petroleum Refining and Related Industries	4
30	Rubber and Miscellaneous Plastic Products	10
31	Leather and Leather Products	2
32	Stone, Clay and Glass Products	12
33	Primary Metal Industries	6
34	Fabricated Metal Products, except Ordnance, Machinery and Transportation Equipment	20
35	Machinery, except Electrical	32
36	Electrical Machinery, Equipment and Supplies	13
37	Transportation Equipment	11
38	Professional, Scientific and Controlling Instruments: Photographic and Optical Goods; Watches and Clocks	9
39	Miscellaneous Manufacturing Industries	13

*Total will not equal 135 because some firms have more than one manufacturing classification.

TABLE VI

RECIPIENTS OF TUSC SERVICE

Classification of Recipient	Number of Recipients	Number of Searches*
Firms	182	389
Individuals:		
Southeastern State College	130	215
East Central State College	8	18
Oklahoma State University	9	18
University of Oklahoma	5	22
Other Oklahoma Colleges	9	33
Texas Colleges	14	19
Other Colleges	4	4
Other Individuals	94	129
Special	55	484
TOTAL	510	1,331

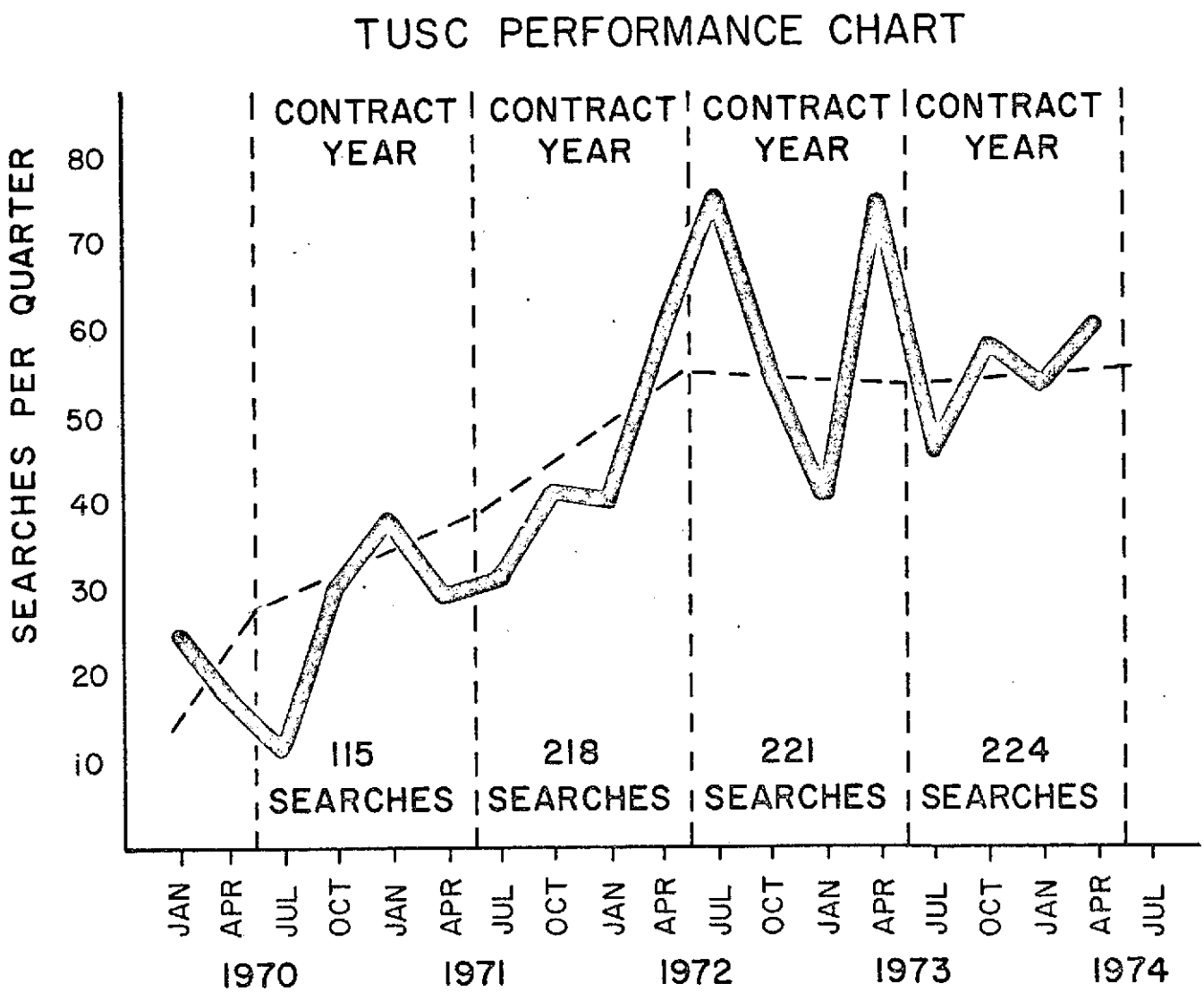
*All requests (for searches and assistance) are included in the "Number of Searches" column (including general or non-technical information requests); therefore, the total number of searches reflected in this table will not coincide with the total number of searches as reported in Appendix B.

TUSC anticipates a higher utilization of TU information by mining firms and campus personnel coordinating a Mine Safety Training Program approved on May 15, 1974. The Institution and the Oklahoma State Department of Mines will provide a Mobile Mine Safety School for not only the initial safety training of mine personnel but retraining as well. This project has the potential of being a highly fruitful area for TUSC assistance/service and application of technology readily available through NASA resources.

CHAPTER II

DISSEMINATION AND ASSISTANCE

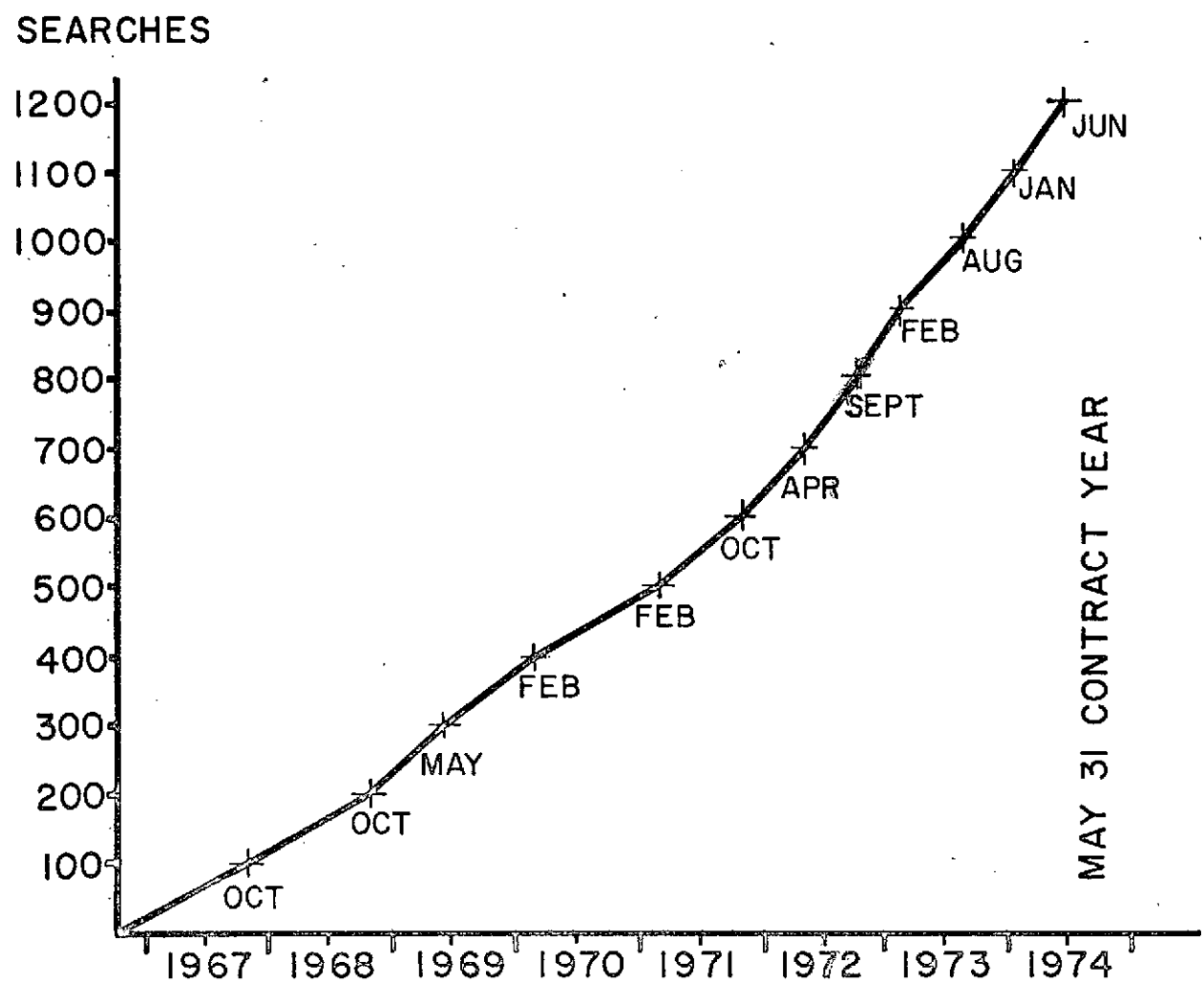
The contractor shall disseminate information and provide technical assistance to industrial firms and other organizations...This dissemination and assistance service shall be provided in a manner designed to bring about the utilization of NASA-generated technology by recipients and to promote a better understanding of the process by which such technology is made available...
(Statement of Work, NASW-2512)



The TUSC Performance Chart on the previous page provides relevant historical data pertaining to the quarterly and annual search accomplishment of the Center. It is interesting to note that search processing during the past three years compares favorably; i.e., 218, 221, and 224 searches respectively.

The Chart below is a trend illustration of the Center's dissemination and assistance service for a 7-year period (searches, as such, were not recorded before September 1966).

SEARCH HISTORY AND ACCOMPLISHMENTS
BY TUSC PER CALENDER YEAR



During the past three years there has been a noticeable leveling-off of the Center's productivity. Searches processed average approximately 220 per year or 55 searches per quarter. With 224 searches processed during the contract year (an all-time high), the Center averaged 56 searches processed per quarter. The record of the number of searches processed per year, through the TUSC 1971 contract year, indicates an average of less than 100 searches completed per year. Search accomplishments numbering 200 plus, per year, is the TU history of the Center during the past three years of operation. The time period coincides with TUSC's cooperative effort with the Small Business Administration. The so-called "leveling off" of productivity, as mentioned above, is considered to be favorable since all organizations must recognize that capability to perform, and the constraints related thereto, are everyday facts of life. In previous reports, TUSC has reflected that 50 searches per quarter represent a realistic expectation of the Center's capability, in terms of number of searches that can be processed. Since we have averaged approximately 55 searches per quarter for three years, there is reasonable validity to our capability statement.

However, TUSC would be remiss <u>not</u> to recognize SBA's TU efforts and give due credit to the SBA for TUSC accomplishments that are truly over and above our expectations. For example, of the 224 searches completed during the contract year 136 of the search requests came to the Center through the TUSC-SBA cooperative arrangement.

Most of the factors relative to the TU effort by TUSC have been mentioned in other reports, but they are repeated for the

benefit of the reader. The Center has noted that there are peaks (and valleys) in search productivity--the reason for this ties in closely to the academic year or school calendar. The Information Retrieval Team is comprised of 100% student help--thus, the Center is faced with frequent "personnel" turnovers as well as non-existent help during the academic "breaks" between semesters. The student help situation obviously means that we have a part-time work force. In this regard, a plus-factor for the Center is that student help is available through the student aid office (work-study program) in addition to students hired within the framework of the contract. This additional manpower availability helps offset the part-time and/or "down" time problem. Based on the foregoing information, it is obvious that the training of Information Retrieval Assistants is a recurring task for the Center. TUSC does not view the turnover of student help unfavorably because we believe that one of the better spin-offs of the TU program rests in the very fact that many former students have been directly involved in the process of disseminating information, and they have a full understanding of information resources available to the public. It is not unusual for us to get client referrals from former student employees of the Center.

In recognizing the Small Business Administration-TUSC co-operative TU efforts in helping the Center attain unprecedented accomplishments during the past three years, other operating techniques that have proved favorable are:

1. Continuing efforts by the Center to make known the TU program and educational resources readily available to both faculty and students.

2. Local and national emphasis on advanced technology and availability of the results of research through the TU programs of NASA, SBA, DOD, and other sources such as TUSC.
3. Continued dialogue with clients who have obtained assistance and/or knowledge of the Center's service as a result of TUSC News Letters, seminars, meetings, and other such formal or informal briefings about the TU program by the Center's Director and/or Industrial Specialists.
4. Using person-to-person contacts with prospective clients in making known the availability of the NASA (and other government agencies) research program results. This is a salesman philosophy--from the client's standpoint, we want him to know "that the Center functions to help him solve his problem."

The 1972 and 1973 Annual Reports include information about the College Plan for the 70's, and the relationship to TUSC's information dissemination and assistance/service functions (1972 Report, page 11, and 1973 Report, pages 10-11). The Institution has moved ahead according to the planning schedule--the three main study disciplines are grouped and organized into three colleges entitled, "School of Behavioral Studies, School of Business and Industry, and School of Liberal Studies." Each school is in the process of developing degree plans for advanced study. When these programs are implemented, TUSC expects a much higher level in the utilization of TU data bank material and related services of the Center. As confirmation of this expectation, the Center

was recently highlighted in an inspection report of the North Central Association of Colleges and Secondary Schools. Representatives of this Association visited the campus during the month of May 1974. TUSC personnel were called upon to brief them on the function of the Center and its relationship to the College. The following is an applicable quote from the North Central report:

> A special resource available to the college and to industry in the area is the Technology Use Studies Center (TUSC). This is a facility supported by the National Aeronautics and Space Administration which makes their technical materials available for educational and industrial purposes. Two professional staff and a number of student assistants conduct searches of NASA documents to provide answers to problems presented by industry and members of the faculty and student body of Southeastern. During the past year over two hundred searches were completed. This is a very important resource that is available to the region as well as to members of the college.

We believe it is also significant to report a forthcoming institutional realignment that is the result of action by the State Legislature on May 5, 1974. A bill was passed to redesignate university status to eight Oklahoma state colleges. Southeastern is one of the eight colleges that will be a university as of August 16, 1974. The Institution will be known as Southeastern Oklahoma State University. Appropriate action will be initiated by TUSC, in cooperation with the NASA Contracts Division to modify NASW-2629 contract accordingly.

As a matter of routine, the TUSC Quarterly Status Reports contain expanded information concerning unusual or significant instances wherein clients have benefited from the TU Program. The Center also stresses the areas of interest based on a periodic review of the various search requests. The areas of interest as

indicated by repeat requests for information during the year are: energy resources (and limitations), various applications of electronics, water/noise pollution controls, waste disposal, water purification (and wastewater treatment methods) and safety (OSHA). The following TUSC searches are representative of the areas of interest as mentioned:

Energy - Searches 1078, 1080, 1081, 1095, and 1131

Electronics - Searches 1052, 1053, 1103, 1110, and 1163

Pollution - Searches 989, 1031, 1105, 1132, and 1188

Waste Disposal - Searches 1059, 1125, 1139, 1148, and 1156

Wastewater Treatment - Searches 994, 1025, 1062, 1119, and 1083

TUSC searches concerning the various methods for treating wastewater involves interaction and cooperation between the Center and the Biological Department faculty and students. It also involves a cooperative effort with the local city officials in developing a wastewater treatment facility capable of meeting EPA standards at relatively low costs. More and more information requests are noted to be repeat requests for the same or related information. Therefore, search processing time is reduced merely by updating a search or searches previously accomplished. The list of searches processed by TUSC during the contract year is included (see Appendix B).

Through a no-cost, letter agreement, TUSC accepted the task of disseminating information aimed at the aviation/aerospace client prospect. It has been an exciting (and rewarding) experiment in expanding public knowledge of the Technology Utilization Program. As an exchange medium, NASA approved the publication of a General Aviation News Letter by TUSC. Publications have

closely coordinated with NASA's General Aviation Technology Office to eliminate duplication of effort. Our publications are written in non-engineer language for persons who are interested in projects, research, development, etc., concerning aviation; whereas, information disseminated by the NASA office is written on the level of an engineer. TUSC is extremely appreciative of the assistance rendered by Mr. Roger L. Winblade who is Chief of the NASA General Aviation Technology Office. Helpful also, in this regard, have been the various NASA Research Centers and personnel having knowledge and expertise in subjects presented in our News Letter. Appendix D is an Annual Report Addendum which provides a record of the TU experiment relative to publishing and disseminating general aviation information in the format of a News Letter. The Oklahoma State Health Department is the designated state agency for developing and/or coordinating wastewater treatment proposals; thus, the Center has capitalized on the opportunity to show state and city officials the practical application of NASA's TU Program through its working relationship with the Biological Department student and faculty personnel. See Chapter III for additional information regarding TUSC services as pertaining hereto.

It has been mentioned earlier in the report that the use of student employees by the Center provides an effective avenue for expanding the outreach of the TU Program. Transfer 164 as discussed on page 12 of TUSC's 1973 Report refers to a former student employee of the Center who is an Electronics Instructor at a Vo-Tech school in Dallas, Texas. Ten search requests from the Dallas' area were processed during the year. Not all of these

searches can be traced directly to the Vo-Tech school, but we strongly suspect that our former Information Retrieval Specialist has not "cooled" his enthusiasm for the TU Program.

TUSC uses manual retrieval techniques in obtaining information to be disseminated. Although the computerized method of storage and retrieval of data is highly developed and extremely efficient, we believe that the system used by our Information Retrieval Assistants has an advantage, considering our limited resources and the level of productivity of the Center. TUSC maintains a file copy of each search accomplished--also, the Center recently completed a card index system. Thus, identification/review of searches, accomplished at an earlier date, is simplified.

TUSC has continued its efforts to provide public service as an information resource for individuals or firms interested in legislative matters relative to the Occupational Safety and Health Act of 1970 (OSHA) and the Equal Employment Opportunity Act (EEO). Where possible, TUSC is represented at various local OSHA/EEO meetings or seminars as a means of staying current on guidelines or revisions to these important statutes which affect all sectors of industry. Pertinent hereto, a TUSC Industrial Specialist taught an Industrial Safety course during the Spring Semester thereby expanding the Safety Department's course offerings. It is significant also to mention a special field trip to the Johns-Manville Corp. plant in Denison, Texas. Classmembers had an opportunity to observe how a large company works within the framework of OSHA's safety standards--likewise the company learned about NASA's Technology Utilization Program.

Transfer 170 is an unusual sample of TUSC's dissemination service. The Center is very proud to have been an indirect instrument in the transfer of information requested by the Weed Instrument Company, Inc. The National Bureau of Standards identified report N73-18447 as the proper reference--procedures for handling certain rare metals. The request for information was channeled through SBA's TU Program; however, the report itself could not be located and that is where TUSC became involved. The appreation letter to the SBA from the firm speaks for itself; this has been reproduced and is included in Appendix C, pages 49-50. Transfers 168 and 169 also resulted from TUSC's interaction with the Small Business Administration. In the former case, a new electronic air filter was developed by the Filterlab Corp; Search #1012 is given credit for producing information that contributed to successful development of the air filter. In the latter case, reference is to TUSC Search 1069. The firm not only has documented its use of NASA information on the removal of dissolved ammonia in wastewater but also informed SBA's TU Officer that a client firm, producing fertilizer, has profitably used the information.

A letter from Frontier Enterprises provides excellent testimony for continuing and expanding the NASA/SBA technical information interchange. The letter was reproduced and included in TUSC's QSR #34. We are including it also in this Annual Report due to its significance to the small business sector of the nation's economy (see pages 55-56, Appendix C).

Service in the form of assistance, in addition to the accomplishment of formal searches, is provided as a routine function.

By far the most common form of assistance rendered during the year refers to the service that was recognized by the Institution's Accreditation Association as mentioned on page 11; i.e., TUSC is a very valuable learning resource, additional to other campus resources. The Center either reproduced or made available (in some cases ordered) NASA data bank information for various individuals (students, in most instances). TUSC also subscribes to various magazine publications such as the Oil and Gas Journal, Water Pollution Journal, Aviation Week & Space Technology, Science, etc. We encourage the use of the Center's resources on a self-help basis, but assistance is provided in locating information for those who are not familiar with all of the information retrieval techniques. A common type of assistance frequently repeated in a variety of forms concerns the need for data on economic and/or population of the area (usually identified by county). Requests for our 1973 Annual Report were received from the Saskatchewan (Canada) Research Council and the Space Division, Rockwell Int'l. Corp. Also, a firm in Wisconsin (the Pacon Corp.) was the recipient of TUSC assistance--NASA SP-5119 and a DSA brochure, "How to Do Business with the Defense Supply Agency" were provided. An aviation student told his parents about the Center and NASA's TU Program; thus, it was through this contact that the assistance and service evolved. Special Publications (SP's) are routinely used as references for various feature articles written for the TUSC General Aviation News Letter. Also, SP-5080, Weather Satellite Picture Receiving Stations, is being reviewed by an aviation faculty member with the idea of developing a study project wherein students will use the SP as a guide for building their own receiving station.

The TUSC Transfer and Impact Report is the summation of Appendix C--it is a compilation of client comments about the Technology Utilization Program. The reader will note that much of the documentation included is the result of cooperative efforts between TUSC and the SBA. The Center has on file well over 100 pages of similar documentation (correspondence) as forwarded to TUSC during the contract year. It would obviously be a bit cumbersome to include all such correspondence in the Annual Report. Therefore, representative documentation is provided not only in Appendix C but Appendix D as well.

CHAPTER III

FACULTY INFORMATION SERVICE

> The Contractor shall continue to provide information services to selected faculty research personnel in a variety of technical disciplines at Southeastern State College, Oklahoma State University, the University of Oklahoma, and other state colleges and universities. (Statement of Work, NASW-2512)

Service to faculty and students was mentioned in the preceding chapter--the self-help information service and knowledge of the TU Program, such as the Wisconsin client contact, as reported on page 16 is one of the best ways we have found to make known to the public what benefits are available for the asking.

Approximately 25% of this year's search effort was in support of our "faculty information service" contract work statement.

The Center has enthusiastically participated in a joint effort involving the Biology Department, TUSC, industry, the Oklahoma State National Guard, and the local community in developing a wastewater treatment facility designed to use nature's ecological system to absorb suspended solids in the wastewater thus improving its quality. The cooperative project points to a relatively inexpensive, alternative sewage treatment method which makes it possible for communities to easily meet established EPA water quality standards applicable to water treatment facilities in the state and nation. By review of search requests, this project can be traced back approximately two years. Searches 811,

812, and 813 were accomplished on the subjects of fish culture, water purification, measurement of oxygen in water, raising organisms in sewage water, etc. A schematic drawing of the water treatment facility and related news releases are included in Appendix C (pages 57-60).

Four searches were highly productive as a resource and reference for the College Debate Team--information requests centered on a nationally current theme, ENERGY. Fortunately, the Center was able to furnish the debating team with much more information than could possibly be used.

The Harrier Aircraft was a feature attraction at the "Air Show" held in conjunction with the opening of the Dallas/Fort Worth Airport. As an operational VSTOL aircraft, it created much interest within the Aviation Department; thus, we enjoyed a brief but very brisk "run" on both formal and informal requests for information about the Harrier.

A total of 25 NASA reports were retrieved and forwarded to the University of Oklahoma Research Institute relative to energy fluxes or temperature levels required to cause skin burns to people or animals. Also, the Research Institute's Flame Dynamics Laboratory had need for information related to oil spills on water. The search (#1074) provided the opportunity for an in-depth review of various aspects of the problem--pertinent reports that TUSC provided concerned the rate of spread, flow patterns, oil slick thickness, oil evaporation losses from the slick, oil spill fires burning under calm (and windy) conditions, and extinquishing techniques for oil spill fires.

There were two instances wherein TUSC obtained assistance from the faculty in response to information needs of area clients. One client had a need for information as to the melting point of 26 and 38 guage copper wire under an electrical load. The client was furnished an answer based on a formula calculation--26 guage copper wire (at 20 degrees Celsius, ambient temperature) should melt at 84 amperes in .5 seconds and 38 guage wire should melt at 5.18 amperes in .5 seconds. The other request concerned the amount of torque needed to rotate a roll of steel. TUSC's QSR #35 reports that "these are instances of Faculty Information Service to the community, in and through TUSC coordination, rather than a service by TUSC to the faculty."

An Aviation Department faculty member requested information on the subject of human stress. The Center's search effort was actually an update of an earlier search (#699). Due to the vast amount of research directly relating to manned spacecraft, there is a wealth of information normally indexed under "human factors." Therefore, it is not surprising that the question about human stress was a fruitful retrieval subject--51 NASA reports on the subject were recommended as reference documents.

CHAPTER IV

COOPERATION WITH OTHER AGENCIES

> The Contractor shall continue to work closely with and attempt to develop new cooperative efforts with (1) institutions operating under or in conjunction with the Oklahoma Technical Services Program, (2) organizations established under the Public Works and Economic Development Act of 1965, and (3) other public and private organizations and institutions concerned with promoting the economic and technological development of the region.
> (Statement of Work, NASW-2512)

Small Business Administration

Information included in Chapter II more than adequately shows the results of TUSC's cooperative effort with the SBA. The SBA documentation included in Appendix C provides additional indication of our close working relationship. Well over 100 pages of relevant material from the SBA has been filed during the contract year. As mentioned on page 17, it is not practical to include all of SBA's TU documentation in this report. The selected material provides good representation of the NASA-SBA TU efforts.

Cooperation and interface with the SBA, in another related area, was instigated by the TUSC Director and is called the Small Business Institute. The program is coordinated with the SBA Office in Oklahoma City. It involves a contractual agreement whereby the School of Business provides management counseling for selected SBA clientele (see SBA correspondence, Appendix C, page 43). Students and faculty of the College of Business and Industry

provided management assistance to area firms on a non-funded basis before award of the SBA contract. The TUSC Director and staff provided TU assistance and/or Center service in support of the Small Business Institute program. The Center accomplished more searches for the Oklahoma City SBA Representative during this contract period than any previous time period.

Department of Labor

TUSC continues to be an information resource in the areas of the Occupational Safety and Health Act and the Equal Employment Opportunity Act, both of which are under the cognizance of the DOL.

Department of Transportation - Florida

The Florida Aviation Bureau responded to the TUSC General Aviation News Letter by requesting NASA data bank information pertaining to airport planning, noise, and land use. TUSC has similar contacts with the Illinois DOT, the Massachusetts Aviation Advisory Commission, and the Washington Airport Commission.

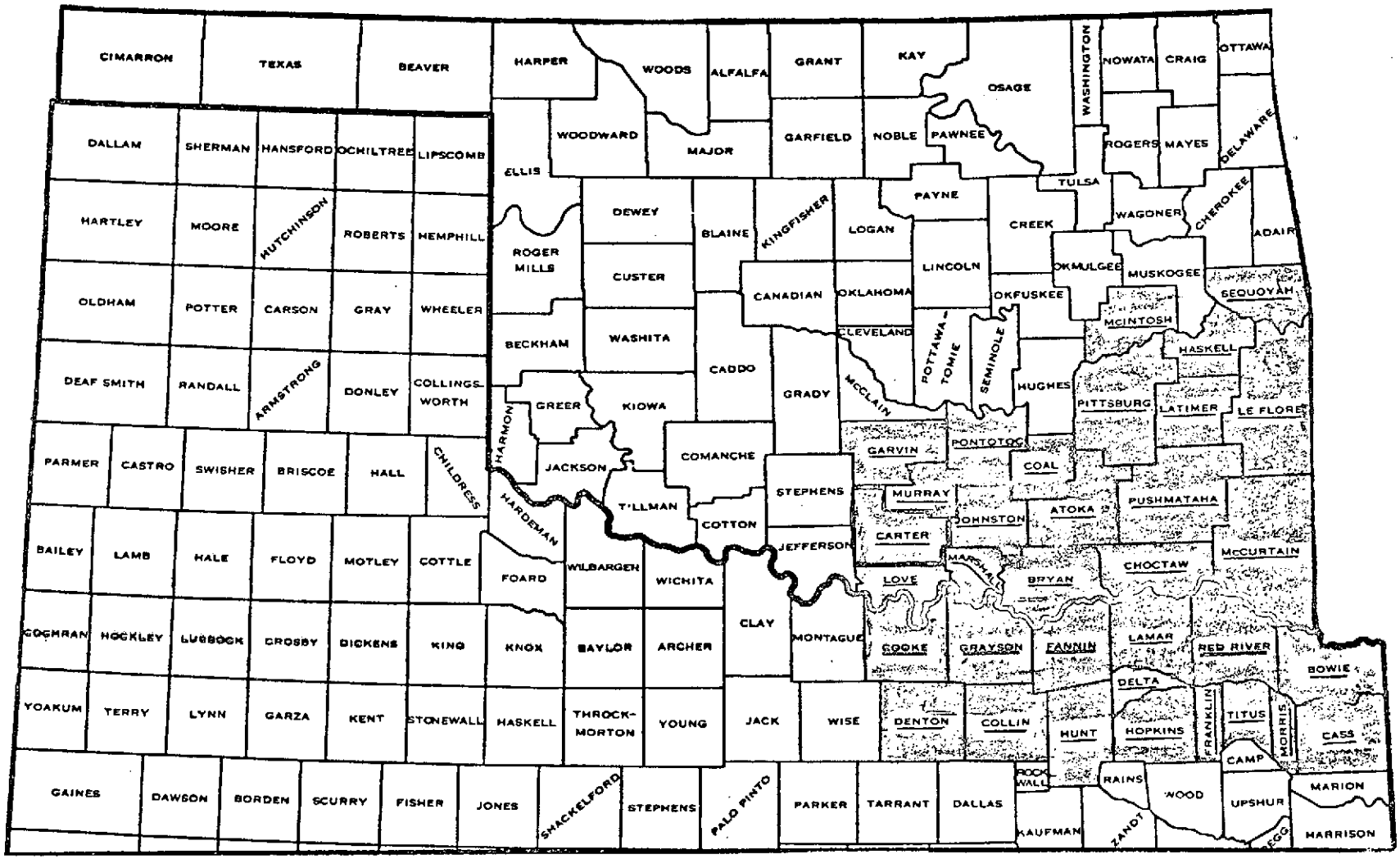
Oklahoma Aeronautics Commission

TUSC's Senior Industrial Specialist, Mr. A. M. Moore, continues to serve as substitute representative on the Governor's Aerospace Education Advisory Committee. He represented the College President at called meetings during the year.

APPENDIX A

TUSC PROJECT AREA

TUSC PROJECT AREA



Scale - Statute Miles

0 100 200 300

APPENDIX B

SUMMARY CHARACTERISTICS OF TUSC TECHNICAL SEARCHES

SUMMARY CHARACTERISTICS OF TUSC TECHNICAL SEARCHES

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
977	Light Scattering Photometers	I-T	Charles Pierce, SBA	Dallas,TX
978	Computer Programmed Instruction	I-S	Ms. Vivian Burnett, SSC	Durant
979	OSHA	I-O	Joe Wilson	Durant
980	Optical Light Sources	I-T	Charles Pierce, SBA	Dallas,TX
981	Recovery of Gold, Silver, and Platinum from Electronic Equipment	28	Duane Jackson Oxford Chemicals	Dallas,TX
982	Head-Up Displays on Windshields	I-T	Giles Lay, Ardmore Air Park	Ardmore
983	Temperature Level Required to Cause Skin Burn	I-T	J. Reed Welker, OU Research Institute	Norman
984	Source of Energy for Skylab	I-S	Henry F. Davis, SSC	Durant
985	Evaluation of "Teaching Machines"	I-T	Giles Lay, Ardmore Air Park	Ardmore
986	Sheer Line Characteristics in Low Speed Aerodynamics	I-T	Giles Lay, Ardmore Air Park	Ardmore
987	Circuit Board Electrical Insulation	I-T	Giles Lay, Ardmore Air Park	Ardmore

I-S -- An individual student.
I-T -- Any individual who is working in technology research for a government agency.
I-F -- An individual faculty member
I-O -- Any other individual who is not employed by a manufacturing firm, agency, or a school system.

NOTE: Unless otherwise indicated, client is located in the State of Oklahoma.

SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
Corrosion of Carbon Steels in Salt Water	I-T	Charles Pierce, SBA	Dallas,TX
Galvanizing Plant Air Pollution	I-T	Charles Pierce, SBA	Dallas,TX
Electrostatic Precipitators	I-T	Charles Pierce, SBA	Dallas,TX
Devices for Filtering Air	I-T	Charles Pierce, SBA	Dallas,TX
Rubber/Metal Seals and Sealing Techniques for Use in Seawater	I-T	Charles Pierce, SBA	Dallas,TX
CO_2 Refrigerant in Portable Refrigerators	I-T	Charles Pierce, SBA	Dallas,TX
Water Purification and Sewage Treatment Plants	I-T	Charles Pierce, SBA	Dallas,TX
Galvanometer: Recording and Memory Devices	I-O	R. P. Wilkinson	Ardmore
Light Transducers: Photomultiplier Tube Replacements, Linear Devices, Solid State, Response to Complete Visible Light Spectrum, Microlumen Areas, and Cheap	I-T	Charles Pierce, SBA	Dallas,TX
Kiln Drying Lumber and Burning Sawmill Waste	I-F	Jim Adcock, SSC	Durant
Electrical Muscle Stimulators, Both External and Implanted	I-T	Charles Pierce, SBA	Dallas,TX
Smoke and Fire Sensors	I-T	Charles Pierce, SBA	Dallas,TX
Analytical Method/Equipment for Measuring NO_2	I-T	Charles Pierce, SBA	Dallas,TX
Analytical Method/Equipment for Measuring SO_2	I-T	Charles Pierce, SBA	Dallas,TX

SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
Gasoline Vapor Recycling/Recovery Methods	I-T	Charles Pierce, SBA	Dallas,TX
Audio Amplifiers and Preamplifiers	I-S	E. W. Milliken	Harland,TX
Select Population and Economic Information on SODA Counties	I-T	Jess Craig, Lincoln Center	Ardmore
Use of Sound to Stun or Immobilize Fish	I-F	Dr. Frank Wade, SSC	Durant
Discrimination of Color Best Seen in Sunlight	I-T	Jack Tucker, School for the Deaf	Sulphur
Quartz Crystals	I-T	Charles Pierce, SBA	Dallas,TX
Infrared Surveillance Technology	I-T	Charles Pierce, SBA	Dallas,TX
Interpreting Geological Structures Using Earth Satellite Photos	I-T	Charles Pierce, SBA	Dallas,TX
Source/s of Polyvinyl Chloride Compounds	I-T	Mrs. Bette Whitson, SBA	Oklahoma City
Automatic Drafting Systems	I-T	Charles Pierce, SBA	Dallas,TX
Electrostatic Precipitators	I-T	Charles Pierce, SBA	Dallas,TX
Urban Surveys from Air/Space Photography	I-T	Charles Pierce, SBA	Dallas,TX
Source of IM 3900 Integrated Circuits	I-T	Charles Pierce, SBA	Dallas,TX
Thermistors: A) Accuracy; B) Long-term Stability; and C) Temperature Variable	I-T	Charles Pierce, SBA	Dallas,TX
Measuring Concentration of Airborne Particulates in the Atmosphere	I-T	Charles Pierce, SBA	Dallas,TX
Airport Electronic Security Devices	I-T	Charles Pierce, SBA	Dallas,TX

SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
A) Noise Immunity System and B) Noise Immunity of Digital System with Normal Communications	I-T	Charles Pierce, SBA	Dallas,TX
Design and Operation of Flame Photometer	I-T	Charles Pierce, SBA	Dallas,TX
A) Electro-optical Ceramics (Lead-Lanthanum Zirconate-Titanate) PLZT, B) Photo-conductive Film or Other Coating for PLZT, and C) Who Are Commercial Suppliers?	I-T	Charles Pierce, SBA	Dallas,TX
Paint Coating for AL-1100	I-T	Charles Pierce, SBA	Dallas,TX
A) High Speed Photography in the Nature of Microsecond Capability and B) Photographing Lightening	I-F	Jim Harmon, SSC	Durant
General Information on Skylab	I-F	Mrs. Velma Dittmar, SSC	Durant
Fluid Flow Measurement	I-T	Charles Pierce, SBA	Dallas,TX
Repeat of Search 994	I-F	Dr. Frank Wade, SSC	Durant
Energy Sources	I-S	Speech Debaters, SSC	Durant
Nondestructive Testing	I-F	John Abitz, SSC	Durant
Low Level Ionized Radiation--Effect on the Human Body	I-S	Michael Spencer, SSC	Durant
Converting Photomultiplier Tube to Solid State and Coupling of Optics	I-T	Charles Pierce, SBA	Dallas,TX
High Speed Air Valve for Use on Color Sorting Machine	I-T	Charles Pierce, SBA	Dallas,TX

SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
Water Pollution and Energy Usage	I-S	David Sykes, SSC	Durant
Influence of Research Personnel on the Effectiveness of Math Teaching in Public Schools	I-F	Paula Platter, SSC	Durant
Transmission of High Frequency Audio Signal by Wire	I-T	Charles Pierce, SBA	Dallas,TX
General Information on Electronics	I-F	Bob Ray, SSC	Durant
Powder Metallurgy and Machine Shop Measurement	I-F	Bob Ray, SSC	Durant
Task Scheduling for Multiprocessor	I-F	Jim O'Steen, SSC	Durant
Microfilm Readers	I-O	Willis T. Hall	Durant
Hydrostatic Testing of Pipe	I-T	Charles Pierce, SBA	Dallas,TX
Urethane Foams Manufacturing Methods	I-T	Charles Pierce, SBA	Dallas,TX
Nondestructive Testing of Drill Pipe	I-T	Charles Pierce, SBA	Dallas,TX
Energy--Use of Hydrogen	I-S	Miguel A. Chuisano	Dallas,TX
Moon Rise and Moon Set Time Table	I-F	Dr. Arnold Walker, SSC	Durant
SOTA of Bourdon Tubes or Substitutes	I-T	Charles Pierce, SBA	Dallas,TX
Scheduling for Optimal Computer Usage	I-F	Jim O'Steen, SSC	Durant
A) SOTA in Cable Television Transmission and Wire--CATV Tech Briefs; B) Broadband TV Cable Communications	I-T	Charles Pierce, SBA	Dallas,TX
Machine Tooling	I-S	Chang Kim, SSC	Durant

SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
Harrier Aircraft	I-S	Randy Southern, SSC	Durant
Apollo Moon Landings	I-S	Randy Southern, SSC	Durant
A) Electrical Discharge Machine, B) Numerical Control Machine, C) Electronic-Chemical Machine, and D) Chemical Machining	I-S	Chang Kim, SSC	Durant
Hydraulic Fluid Under High Pressures in Long Lines	I-T	Charles Pierce, SBA	Dallas,TX
Data Modems and High Speed Data Modems	I-T	Charles Pierce, SBA	Dallas,TX
A) Delta Modulation, B) Pulse Code Modulation, C) Voice Signals, and D) Voice Signals or Voice Signal Modulation	I-T	Charles Pierce, SBA	Dallas,TX
A) Data Privacies Systems, B) Voice Digitization, C) Voice Privacy, D) Voice Scramblers, E) Data Scramblers, F) Facsimile Scramblers, G) Facsimile Privacy, and H) Speech and Facsimile Scrambling and Decoding	I-T	Charles Pierce, SBA	Dallas,TX
Population Census to Make Population Projections	I-S	Jerry Brenner, SSC	Durant
SOTA on Fuel Cells	I-S	Mark Hunley	Dallas,TX
Prevention of Corrosion and Corrosion Inhibitors	I-T	Charles Pierce, SBA	Dallas,TX
Fluoride Content of Blue River and USHS Recommended Level for Fluoride in Human Drinking Water	I-F	Dr. Arnold Walker, SSC	Durant

SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
Replication Process of Circular Deoxyre-bonucleic Acid Molecules (DNA)	I-S	Mike Spencer, SSC	Durant
Solid Waste Disposal Systems for Small Cities	I-T	Charles Pierce, SBA	Dallas,TX
Trace Metal Analysis or Heavy Metal Analysis in Rainbow or German Brown Trout	I-T	Charles Pierce, SBA	Dallas,TX
Plastics Fabrication	I-T	Charles Pierce, SBA	Dallas,TX
Chemicals Used for Water Treatment	I-T	Charles Pierce, SBA	Dallas,TX
Disposal of Pickling Acid	I-T	Charles Pierce, SBA	Dallas,TX
Manufacturing of a Hidden Field Illuminated Display	I-T	Charles Pierce, SBA	Dallas,TX
How Industry Affects Adverse Weather	I-T	Emil Farve	Ardmore
Use of Activated Charcoal in: A) Purification of Air; B) Purification of Water; C) Purification of Other Gases; D) Removal of Heavy Hydrocarbons from Light Hydrocarbons; E) Removal of Color, Taste, and Odor from Hydrocarbons, Air and Water; and F) Any Other Related New Products	I-T	Charles Pierce, SBA	Dallas,TX
Non-dispersive Infrared Detectors of Methane, Carbon Dioxide, and Other Gases with Absorption Bands in the Infrared Range	I-T	Charles Pierce, SBA	Dallas,TX
Boring Precision Holes in Glass Tubing	I-T	Charles Pierce, SBA	Dallas,TX
Measuring Dissolved Ammonia in Waste Waters	I-T	Charles Pierce, SBA	Dallas,TX

SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
Electronic Sensor to Detect Hydrogen and Natural Gas	I-T	Charles Pierce, SBA	Dallas,TX
Forming Stainless Steel Pipe Fittings, 1) Hydraulic Forming, 2) Extrusions, and 3) Forgings	I-T	Charles Pierce, SBA	Dallas,TX
Non-destructive Testing	I-T	Charles Pierce, SBA	Dallas,TX
Paint that is Fireproof after Application	I-T	Charles Pierce, SBA	Dallas,TX
Spread of Oil on Water, Either Under Calm Conditions or in Storms--Influence of Oil on Calming Waves During a Storm	I-T	J. Reed Walker, OU Research Institute	Norman
Naval Hydrodynamics, Numerical Hydronautics, and Strip Theory of Ship Motion	I-T	Charles Pierce, SBA	Dallas,TX
Frequency Standards--Attaining Precise Control	I-T	Charles Pierce, SBA	Dallas,TX
Pickling of Steel Wastewater Recovery	33	Roby Mersecchi, Hillson Steel Co.	Durant
Hydrogen as an Energy Source	I-S	Speech Debaters, SSC	Durant
Magnetohydrodynamics - MHD	I-S	Speech Debaters, SSC	Durant
Energy Dissipation	I-S	Speech Debaters, SSC	Durant
Solar Energy	I-S	Speech Debaters, SSC	Durant
Printed Circuit Board Connectors	I-T	Charles Pierce, SBA	Dallas,TX
Effect of Insecticides/Pesticides on the Growth of Crustaceons	I-F	Dr. Frank Wade, SSC	Durant
Integrated Circuit Sockets, Dual Inline Plastic (DIP) Sockets, DIP Integrated Circuit Sockets, and Other Sockets for Semiconductor Devices	I-T	Charles Pierce, SBA	Dallas,TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1085	Plastic Molding or Injection Molding of Thermal Plastics into Electronic Connectors or Electronic Insulator Parts	I-T	Charles Pierce, SBA	Dallas,TX
1086	Sources of Silver, Platinum, and Gold	I-T	Bette Whitson, SBA	Oklahoma City
1087	Molded Electronic Cable Plugs or Connectors	I-T	Charles Pierce, SBA	Dallas,TX
1088	Printed Circuit Board Wave Soldering, Pre-cleaning, Pre-fluxing, Post-Cleaning, Pollution Control, and Elimination of Flux Waste and Solvent Vapors	I-T	Charles Pierce, SBA	Dallas,TX
1089	Lock-In Amplifiers Used in Low Level Signal Amplification with High Noise Content	I-T	Charles Pierce, SBA	Dallas,TX
1090	SOTA of an Ion Accelerator or Ion Injection with At Least 1 Meg Electron Volts	I-S	Bob Wilkins	Richardson,TX
1091	Constructing an Amplifier, Vacuum Tube	I-S	Tim Gray	Dallas,TX
1092	55-Nitinal--The Alloy with a Memory	I-S	Bruce Ganze	Dallas,TX
1093	Effects of the Chloride Salts, Lithium Chloride, on Living Organisms	I-S	Harold Wilensky	Dallas,TX
1094	SOTA on Blow-Molding of Plastics	I-T	Charles Pierce, SBA	Dallas,TX
1095	Conversion of Wind Energy	I-T	Charles Pierce, SBA	Dallas,TX
1096	Landing Field Surface Information	I-T	Captain William T. Alford	Denton,TX
1097	Membrane Filtration for Use of Reverse Osmosis for Purification of Water	I-T	Charles Pierce, SBA	Dallas,TX
1098	Electronic Circuitry	I-F	James Harmon, SSC	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1099	AM Radio Kit Information	I-S	Mark Hunley	Dallas,TX
1100	Profiling Bacteria by Means of Chromatography	I-F	Dr. Jack Robinson, SSC	Durant
1101	Information on Russia	I-S	Shannon Whisenhunt, SSC	Durant
1102	Atmospheric Contamination Precipitation over the USSR	I-S	Shannon Whisenhunt, SSC	Durant
1103	Electric-field Sensors (1) Characteristics of Dielectric Materials, (2) Variance of Dielectric Constants with Applied Electric Field, and (3) Uses of Barium Titanate in Ultrasonic Transducers	I-T	Charles Pierce, SBA	Dallas,TX
1104	Hydrophonics	I-F	Jim Adcock, SSC	Durant
1105	Suppressing Wood Planer Noises	26	Haggard Box Factory	Durant
1106	Cadmium Sulphide/Selenide Photo Conductors and Information on II-IV Compound Photo Conductors	I-T	Charles Pierce, SBA	Dallas,TX
1107	Printed Circuit Boards--Silk Screen, Etched, Drilled, and One Side Only PCB. Also, Disposal of PCB Wastes	I-T	Charles Pierce, SBA	Dallas,TX
1108	Converting Brush-Type Circuit Generator to Brushless for Field Excitation	I-T	Charles Pierce, SBA	Dallas,TX
1109	Frequency Shift Key Multiplexing Unit to be Used Over Telephone Lines	I-T	Charles Pierce, SBA	Dallas,TX
1110	Electrical Current Versus Melting Point of 26 and 38 Guage Wire	I-T	Slaughter Electric Company	Ardmore
1111	Welding Aluminum Metal	I-T	Charles Pierce, SBA	Dallas,TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1112	Emergencies in Single and Light Twin Aircraft	I-S	Tim Lenahan, SSC	Durant
1113	Tornado Information	I-F	Dr. Arnold Walker, SSC	Durant
1114	Solar Cells or Light Sensitive Photo Transistors	I-T	Charles Pierce, SBA	Dallas,TX
1115	Fire Resistant Insulations--Urethane Foam that Contains a Bromide Radical	I-T	Charles Pierce, SBA	Dallas,TX
1116	Boric Acid Substitute as a Fireproofing Material	I-T	Charles Pierce, SBA	Dallas,TX
1117	Process for Distilling Methanol	26	Haggard Box Factory	Durant
1118	Repeat of Search 1117	I-O	Wendell Hale	Caddo
1119	Water Purification Using Deionization Process	I-T	Charles Pierce, SBA	Dallas,TX
1120	VIDEO Transmission and Storage via Telephone Lines	I-T	Charles Pierce, SBA	Dallas,TX
1121	Sources of Pottery Clay--Stoneware, Jordan, Monmouth, Sagger	I-F	Jim Barnett, SSC	Durant
1122	Uses of Laser to Evaluate the Human Eye	I-T	Charles Pierce, SBA	Dallas,TX
1123	Solar Energy/Cells	I-T	Charles Pierce, SBA	Dallas,TX
1124	Pitots Attitude Toward Danger or Stress	I-F	Elizabeth Murphy, SSC	Durant
1125	Solid Waste Treatment	I-T	Charles Pierce, SBA	Dallas,TX
1126	Wind Energy	I-T	Charles Pierce, SBA	Dallas,TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1127	Methods for Spot Electroplating	I-T	Charles Pierce, SBA	Dallas,TX
1128	Solar Reflector	I-F	Dr. John R. Wright, SSC	Durant
1129	Sulphur Dioxide Monitoring Methods/Equipment	I-T	Charles Pierce, SBA	Dallas,TX
1130	Cost Control and Management	I-T	Bette Whitson, SBA	Oklahoma City
1131	Hydrogen: (1) Power Plant; (2) Cost of Hydrogen by Electrolysis of Water; (3) Economy of Electrolysis and Use of Platinum in Hydrogen Explosion; (4) Combustion of Electrolysis Products and Burning Process Utilization; (5) Inexpensive Methods of Electrolysis of Water	I-T	Charles Pierce, SBA	Dallas,TX
1132	Using Electronic Methods for Water Purification	I-T	Charles Pierce, SBA	Dallas,TX
1133	Hydrogen Oxygen Power Plant	13	Dub Manahan, Stone's Propane	Durant
1134	Methanol, Hydrogen and Other Alternate Fuel	13	Dub Manahan, Stone's Propane	Durant
1135	Substitute Fuels	I-T	Charles Pierce, SBA	Dallas,TX
1136	Human Behavior Under Stress	I-F	Elizabeth Murphy, SSC	Durant
1137	Repair of Large Cracks or Defects in Iron Castings	I-T	Charles Pierce, SBA	Dallas,TX
1138	DC-Powered, Medical X-ray Machines--Scan Type	I-T	Charles Pierce, SBA	Dallas,TX
1139	Disposal of Printed Circuit Board Wastes	I-T	Charles Pierce, SBA	Dallas,TX
1140	Design of Portable Generators/Alternators	I-T	Charles Pierce, SBA	Dallas,TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1141	Welding of RA 330 Stainless to RA 330 in an Argon Atmosphere to Resist 1500°--1700° F	I-T	Charles Pierce, SBA	Dallas,TX
1142	Low Level GaAs Type Invisible Infrared Laser--How Can Beam Be Made Visible Under Any Ambient Light Condition?	I-T	Charles Pierce, SBA	Dallas,TX
1143	Joining Polyethylene	I-T	Charles Pierce, SBA	Dallas,TX
1144	Wankel Engine	I-F	Jim O'Steen, SSC	Durant
1145	Computerized Bacterial Identification System	I-T	Dr. K. J. Fugate, U.S. Food and Drug Administration	Dallas,TX
1146	Black Holes in Space	I-F	Alvin Willis	Durant
1147	Hydrogen Sulfide Monitoring Methods/ Equipment	I-T	Charles Pierce, SBA	Dallas,TX
1148	Disposal of Chrome Waste (Chromic Acid)	I-T	Charles Pierce, SBA	Dallas,TX
1149	Hazard Factor in Using Liquid Chlorine as Water Disinfectant	I-T	Charles Pierce, SBA	Dallas,TX
1150	Bellows Seal Valve for Nuclear Plant Application	I-T	Charles Pierce, SBA	Dallas,TX
1151	Emergency/Fire Alarm Systems and Emergency Lighting	I-T	Arthur G. Hopkins, Jr., Hopkins & Company	Sherman,TX
1152	Photographic Darkroom, Low-Cost Timers	I-T	Charles Pierce, SBA	Dallas,TX
1153	Fuel Cells and Solar Cells	I-O	Neil R. Jackson	Bonham,TX
1154	Separation of Hydrocarbons from Water	I-T	Charles Pierce, SBA	Dallas,TX
1155	Cyclic Converters	I-T	Charles Pierce, SBA	Dallas,TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1156	Incinerators for Use in Residences, Apartments, Small Commercial Buildings, Offices, Etc.	I-T	Charles Pierce, SBA	Dallas,TX
1157	Welding Machine to Weld Stainless Steel Mesh Seams	I-T	Charles Pierce, SBA	Dallas,TX
1158	Flame Retardant Material for Use in Commercial Aircraft Loading Vehicles	I-T	Charles Pierce, SBA	Dallas,TX
1159	Metal Forming Techniques	I-S	Evi-Kyunct Song, SSC	Durant
1160	Electronic Music on Synthesizer	I-S	Patty Clay, SSC	Durant
1161	SOTA on Medical Use of CO_2 Sensors	I-T	Charles Pierce, SBA	Dallas,TX
1162	Color Analyzers (Densitometers) for Photographic Dark-Room Use	I-T	Charles Pierce, SBA	Dallas,TX
1163	Solid State 12 Volt Timer That Incorporates a Time Delay Relay	I-T	Charles Pierce, SBA	Dallas,TX
1164	SOTA on Liquid Metering Devices for Chemical/Petroleum Distribution	I-T	Charles Pierce, SBA	Dallas,TX
1165	Solvent Activated (One Component) Plastic Coating for Steel	I-T	Charles Pierce, SBA	Dallas,TX
1166	Epoxy Molding Compound	I-T	Charles Pierce, SBA	Dallas,TX
1167	Durant, Oklahoma Census Data	I-O	Robert Thomas	Durant
1168	Characteristics of Using Magnesium Oxide for Electrical Insulation	I-T	Charles Pierce, SBA	Dallas,TX
1169	Design Characteristics of Induction Coils	I-T	Charles Pierce, SBA	Dallas,TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1170	Recovery of Gasoline Vapors	I-T	Charles Pierce, SBA	Dallas,TX
1171	Use of Wing Spoilers for Roll-Control	I-O	Antoni Bingelis	Austin,TX
1172	Airport Noise	I-T	C. E. Nilson, Florida Dept. of Transportation	Tallahassee,FL
1173	Heat Pipes	I-T	Charles Pierce, SBA	Dallas,TX
1174	LASER Welding of Carbon Steel Tubing	I-T	Charles Pierce, SBA	Dallas,TX
1175	Activation Analysis of Iodine in Biological Fluids	I-T	Charles Pierce, SBA	Dallas,TX
1176	SOTA on Water Well Construction	I-T	Charles Pierce, SBA	Dallas,TX
1177	Soil Sampling By Automatic Penetration Tests.	I-T	Charles Pierce, SBA	Dallas,TX
1178	Intumescent Coating--Fire Resistance	I-T	Charles Pierce, SBA	Dallas,TX
1179	Welding--Flame or Plasma Spraying of Tungsten-Carbide Powder	I-T	Charles Pierce, SBA	Dallas,TX
1180	Antifouling Marine Coating/Paint	I-T	Charles Pierce, SBA	Dallas,TX
1181	Air Pollution Measurement	I-O	Frank Parks	Oklahoma City
1182	Soil Drilling Technology	I-T	Charles Pierce, SBA	Dallas,TX
1183	Voltage Regulator Exciter	I-T	Charles Pierce, SBA	Dallas,TX
1184	Air Pollution	I-S	Nancy Brewer, SSC	Durant
1185	Conversion of Methane Gas to a Liquid	I-O	C. W. Rollins	Ardmore
1186	U.S. Business Investments Abroad	I-F	Dr. Leon Hibbs, SSC	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1187	Fail-Safe Hydraulic Brake System	I-T	Charles Pierce, SBA	Dallas,TX
1188	Airport Land Use Planning	I-T	Clifford E. Nilson, Florida Department of Transportation	Tallahassee,FL
1189	Low Temperature Properties of Concrete and Concrete Structures	I-T	Charles Pierce, SBA	Dallas,TX
1190	Diesel Engine--Major Overhaul Time Sequence	I-T	Charles Pierce, SBA	Dallas,TX
1191	Corrosion Protection of Cast Iron Water Pipe	I-T	Charles Pierce, SBA	Dallas,TX
1192	Dust Collecting for Limestone/Cement Operations	I-T	Charles Pierce, SBA	Dallas,TX
1193	Measurement of Oxygen Concentration in Air and Water	I-T	Charles Pierce, SBA	Dallas,TX
1194	RTV Silicone Rubber Bonding Materials	I-T	Charles Pierce, SBA	Dallas,TX
1195	Manufacture of Plastic, Structural Frames	I-T	Charles Pierce, SBA	Dallas,TX
1196	Telemetry Monitoring of Cathodic Corrosion Protection System	I-T	Charles Pierce, SBA	Dallas,TX
1197	Repeat of Search 1182	I-T	Charles Pierce, SBA	Dallas,TX
1198	Investment Molding/Casting	I-T	Charles Pierce, SBA	Dallas,TX
1199	Feasibility of Raising Earthworms Commercially	I-T	Bette Whitson, SBA	Oklahoma City
1200	High Stress Plastic Material	I-T	Charles Pierce, SBA	Dallas,TX

APPENDIX C

TRANSFER AND IMPACT REPORTS

#25
BEING ONE

U. S. SMALL BUSINESS ADMINISTRATION

501 MERCANTILE BUILDING
30 NORTH HUDSON
OKLAHOMA CITY, OKLAHOMA 73102

HAS JUST to
BEGUN

file

August 29, 1973

Rec'd
8-31-73

Dr. Henry Gold
School of Business
Southeastern State College
Durant, OK 74701

Dear Dr. Gold:

As you were notified by phone earlier, we are pleased to receive word that your school is one of three schools in Oklahoma to receive contracts for Small Business Institutes. We certainly hope that this is the first semester of a continuing contractual relationship between your business department and this Agency to provide this on-going management counseling to SBA borrowers.

In order to help me find appropriate cases for fall--and spring--please let me know how far you could travel. Just send list of counties as a guide.

Will be in touch with you shortly to sign contracts for fall. Am presently trying to arrange for publicity and will contact you when I have more word.

Sincerely,

Bette Whitson

Bette Whitson
Management Specialist

U. S. GOVERNMENT
SMALL BUSINESS ADMINISTRATION
1100 COMMERCE STREET
DALLAS, TEXAS 75202
214/749-2218

Rec'd 3-4-74

February 28, 1974

Mr. Augie Moore
Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Dear Augie:

Enclosed are four case studies and evaluation letters resulting from information furnished to TU clients by this office. A TUSC search and other data were a part of the information furnished in each case.

We are especially appreciative for the quick response given on telephone inquiries, in addition to search requests. As a result of such an inquiry to you on February 27, 1974, this office was able to furnish one of its District Directors an article on lighter-than-air freight transport within twenty-four hours. This may be a tribute to the TUSC News and your interest in general aviation. In any event, I know of no other source that could be contacted for this type of action and results.

Thanks, again.

Sincerely,

S. Charles Pierce

S. Charles Pierce
Technology Utilization Officer

Enclosures (4)

NOTE: Eight letters from the SBA of a similar nature were received by TUSC during the contract year.

January 31, 1974

RECEIVED
FEB 1 1974
REGION VI - PMA

Mr. S. Charles Pierce
Technology Utilization Officer
Small Business Administration
1100 Commerce St.
Dallas, Texas 75202

Dear Mr. Pierce:

I am happy to take a few minutes to indicate to you and Mr. Mitchell how pleased we were with the files of information you were able to secure for us. We found that of the information we received on Cable TV Equipment and Broadband Cable TV Communications, approximately 75-80% of the data was not pertinent to what we were doing. However, the remaining 20-25% was of significant value.

The info we received on computerized traffic control was not within the general guidlines of our entry into this field. However, this info certainly would be of interest to the traffic control industry. Last is the Rand Corp. report which is well within the framwork of our business here. That report, as well as most Rand reports on Cable TV, is always of significant interest to us.

Charles, we expect to be working with you again in the future on additional topics. Thank you again for the service and for the promptness with which you were able to secure the data we requested.

Sincerely,

TOCOM, Inc.

Brian E. Belcher
Manager Digital Systems

TUSC SEARCH: #1045

BEB/lfw

P.O. BOX 47066 • DALLAS, TEXAS 75247 • 214/263-3661
THE TOTAL COMMUNICATIONS COMPANY

Datotek, inc.
data security systems
8220 Westchester, Dallas, Texas 75225 (214) 363-4495
TELEX 73-0558

8 February 1974

Mr. S. Charles Pierce
Small Business Administration
1100 Commerce Street
Dallas, Texas 75202

TUSC SEARCHES: #1050
1051
1052
1053

Dear Mr. Pierce:

I must apologize for being so late in giving you this evaluation. Just as I was starting to look into the information I received from you, I was pulled off and put onto another project.

I will at this time, however, give you some first impressions. It looks like 25% of the information will directly apply to our problem.

In glancing through the literature I have not found anything on facsimile scramblers. The subject of data modems is very thoroughly covered as was delta modulation and pulse code modulation.

After going through the data received, it is my opinion that the information would be easier for me to analize and use if each of the topics were kept separate. In a couple of cases several topics are lumped together which makes analysis difficult.

For instance, the subject voice digitization, voice privacy, and voice scramblers, delta modulation, pulse code mudulation and voice signals should be kept as separate topics or at least be kept separate in the report file. In our business the end result of all the above topics is the same, however in the design of a system each topic forms a basic part of the system and must be studied as a separate topic.

I was also somewhat overcome by the volume of information received and having to go through and sort out those parts which do apply. The suggestion in the previous paragraph would help in this matter.

I hope the above suggestions will help you in further contacts. We do appreciate your help and am looking forward, to working with you to obtain copies of some of the publications referenced. Your job is a tremendous one in scope and very valuable to small businesses around the country.

RECEIVED
FEB 12 1974
REGION VI - DALLAS

Sincerely,

K. M. Branscome

K. M. Branscome
Project Engineer

Anderson, Greenwood & Co.

MAILING ADDRESS:
P. O. Box 1097
BELLAIRE, TEXAS 77401

PLANT:
5425 SOUTH RICE AVE.
HOUSTON, TEXAS 77036

TEL.: 713-668-0631
TWX: 910-881-2652
TELEX: 77-5219

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SAFETY RELIEF VALVES
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TARGET TOW EQUIPMENT

March 26, 1974

Mr. S. Charles Pierce
Small Business Administration
1100 Commerce Street
Dallas, Texas 75202

Mr. Pierce:

Since our meeting in Houston I have received a number of documents and literature searches relative to the bellows sealed valve we are attempting to develope.

As one might expect much of the data is not pertinent to my problem. However, the data does itemize a number of reports dealing not only with bellows sealed valves, but also with my specific application. One such report was prepared by a potential user of our product.

This data is being pursued and will be very benefical to our design/developement efforts.

I thank you again for your help.

Yours very truly,

W D Stringfellow

William D. Stringfellow
Project Engineer

TUSC SEARCH: #1150 (Tech Briefs 63-10228, 63-10198, 66-10249)

WDS:pf

2504 Hickory Ave.
Metairie, La. 70003
phone
(504) 737-3891

plastic engineered products inc + advanced composites div

March 26, 1974

SMALL BUSINESS ADMINISTRATION
Region VI - PMA Division
1100 Commerce Street
Dallas, Texas 75202

ATTENTION: MR. M. T. KLEIN
Acting Assistant Regional Director, Procurement Assistance

REFERENCE: Letter dated 3/18/74 - Technology Program

Dear Mr. Klein:

In response to your letter of March 18, 1974, we have received a wealth of information from you and we are still expecting some more. What we have received to date has been very good in helping us weed out some of our ideas on the feasibility of doing this work ourselves. It has also put us in touch with some firms that we are now contacting.

Mr. Pierce is helping us to obtain some further reports which I feel will help us zero in on some more specifics.

Thank you for your help. It has put together a mass of information that would have otherwise not been available to us.

Very truly yours,

PLASTIC ENGINEERED products inc

S. Steven Gorin
President

mh

Copy: Mr. S. Charles Pierce

RECEIVED
APR 1 1974
REGION VI - PMA

TUSC SEARCHES: #1137 & 1127

[redacted]

EED INSTRUMENT CO., INC.

March 29, 1974

Mr. M. T. Klein
Acting Assistant Regional Director
Procurement Assistance
Small Business Administration
Region VI - PMA Division
1100 Commerce Street
Dallas, Texas 75202

Dear Mr. Klein:

Thank you for your letter of March 18, 1974 making reference to the technical information furnished us by your Mr. Charles Pierce.

Very little is known about the Rare Metal group noted in the periodic table of the chemical elements. These rare metals are expensive and delicate to work with as we found out after several catastrophic failures in our laboratory.

I wrote the S.B.A. requesting assistance on our problem. Mr. Pierce phoned us and we explained our problem in detail to him. We are extremely grateful to your Mr. Pierce, in matter of a few hours he had an expert by the name of Mr. George Burns of the National Bureau of Standards call us to advise us on proper procedures to handle these rare metals. Mr. Burns advised us to acquire a certain technical NASA report at Washington, D.C..

It was impossible for us to find the NASA report, we tried Washington, NASA Houston, and libraries to no avail.

I called Mr. Pierce and within hours he found the NASA report at a small college in Oklahoma.

Because of Mr. Pierce efforts, we saved countless hours of research work, a significant amount of funds, and enhanced our position to where we are now in pre-production testing of high temperature measuring devices using rare metals, a new development for us.

TUSC SERVICE

Thank you very much for your help.

Yours very truly,

WEED INSTRUMENT CO., INC.

Rudy B. Martinez
Mgr. of R & D

RBM:sjb

Rothe Developments Inc.
Material Testing-Research and Development Laboratori
4614 SINCLAIR ROAD
SAN ANTONIO, TEXAS 78222
(512) 648-3131

3 April 1974

WER-015

Mr. M. T. Klein
Small Business Administration
Region V1 - PMA Division
1100 Commerce Street
Dallas, Texas 75202

Dear Sir:

In reference to your letter dated 18 March 1974, we are still assorting and working through the comprensive material supplied through the services of Mr. Charles Pierce, Technology Utilization Officer. We can state today as follows:

1.) The material provided enables us to be most selective in the efforts of company sponsored programs.

2.) The material also saved us considerable time and funds which were slated to be undertaken, but now seem to be redundant in view of the listed activities within the documentation supplied.

Expressing our appreciation we remain,

TUSC SEARCHES: #1131 & 1123

Sent NASA Tech Briefs:
65-10363
66-10013
69-10135
69-10635
70-10610
71-10203
72-10166

Sincerely,
ROTHE DEVELOPMENT INC.

W. E. Rothe

W. E. Rothe
General Manager

TUSC General Aviation News Letter, Vol. I, No. 4.

WER/bf

Telephone
(512) 735 1948

CARRIERS EQUIPMENT LABORATORIES

Electronic Engineering and Design

ANDREW LONGAKER
PRESIDENT AND GENERAL MANAGER
RONALD J. WILLIAMS
VICE-PRESIDENT - CHIEF ENGINEER
H. VAN ZANDT
SALES MANAGER - ELECTRONICS DIVISION

1637 West Magnolia Street, San Antonio, Texas
78201

11 April 1974

Mr. M. T. Klein
Small Business Administration
1100 Commerce Street
Dallas, Texas 75202

Dear Mr. Klein:

Responding to your 18 March inquiry as to our use of information furnished through Mr. Charles Pierce we must say first that we probably have as much information as is generally extant as to the state of the art for this particular field, but that it is not sufficient. Our hope was that in the mind-stretching demands of NASA's programs that some significant breakthrough might develop.

The Small Business Administration's response came in two compilations of extracts. The first to arrive was a printout from a computer. We did not find anything which seemed to bear on our problem. This does not mean that anything is wrong with the system unless perhaps additional effort must be made in the programming of the material going into the computer for more accurate retrieval. It also may be that requests such as ours may be more stringently analyzed and categorized so that they may "fit" the frames of reference of the computer.

The second compilation was styled as an "In-House Search Request". It contained fewer suggestions for investigation but seemed to contain several which were closer to target. Due to our preoccupation with organizational problems we have not followed up on the references but will do so when we can.

With respect to your Technology Transfer Program in general, it is hard to conceive of anything to compare with it in its potential for value when it may be completed and perfected. It is possibly the one practical means through which small business can hope to compete with big business technologically.

There is an additional phase which might be added to enhance the program's effectiveness. This would be to include in the body of information which you already have, all patents which have been issued. Undoubtedly many patents are issued where the patentee receives no appreciable benefit from his creation because not enough people can learn of it. Businesses large enough to justify a patent surveillance program will know of all such items but may not have the discernible uses that many small firms might recognize. Such information might also help small firms to conserve their resources by not "re-inventing the wheel". Too, many patents, long out of date, may nevertheless spark ideas for an inquiring mind to result in new progress.

There is also a suggestion we would make as to channelling the information which you develop. It would seem to be basic logic that if America is to maintain its competitive industrial leadership without compromising its high wage levels, that all available technical information should be dispersed to as many firms as might be able to use it. It then follows that all legitimate channels be exploited. This should include professionals who could make a profit by receiving the free information and then gain personally by showing producers (buried in the details of everyday operation) how to apply the information profitably. In this category would be found industrial engineers, tool and product designers, management consultants and myriad classifications of "efficiency experts".

We appreciate the efforts of your Agency to assist us and we hope that your efforts together with ours may still be fruitful.

Yours truly,

Andrew Longaker

AL/ap

TUSC SEARCH: #1120

Sent Tech Brief 69-10139
NASA SP-5080

The MOLYCHANGER COMPANY
1637 West Magnolia
San Antonio, Texas 78201

12 April 1974

Mr. M. T. Klein
Small Business Administration
1100 CommerceStreet
Dallas, Texas 78502

Dear Mr. Klein:

Regarding your 18 March inquiry as to our use of information furnished through Mr. Charles Pierce, we must say first that we posed a most difficult problem and one in which we were more hopeful than confident because we had been advised by creditable experts that within the scope of current "traditional wisdom" that the problem, as we stated it, could not be solved. Our hope was that in the advanced work of the Government's NASA programs that some clue would have been developed.

In the material forwarded we did not find any references which seemd to answer our questions directly although some seemed to warrant investigation.

We have reduced the priority of this project considerably and when we get to it again we shall follow up on those references which appear to be relevant.

We greatly appreciate your attempts to help us and we do not feel that our failure was due in any respect to the quality of retrieval work done by the SBA.

Yours truly,

Andrew Longaker

TUSC SEARCH: #1132

. Sent Tech Briefs 68-10555
70-10456

AL/ap

DEC 6 1973
REGION VI - PMA

FRONTIER ENTERPRISES

November 30, 1973

Mr. S. Charles Pierce
Technology Utilization Office
Small Business Administration
Region VI - PMA
1100 Commerce Street
Dallas, Texas 75202

Dear Mr. Pierce,

Earlier this year, as you undoubtedly recall, I requested information on several vital areas of technological interest to my company, Scientific Dimensions, Inc. and another company for whom I was consulting, Frontier Enterprises, Inc. Since that time I have changed to full time employment at Frontier Enterprises as Director of Applied Sciences. I cite this change so you will not develop mass confusion over the letterhead on this communication.

I would like to take this time to make a few comments on your program and the effectiveness of the information supplied. First, the information searches are of tremendous importance in addressing our specific problems in the development and manufacture of aerosol generation and measuring equipment. The larger data base computer searches certainly provide a better overview of progress being made in government research and development projects. However, I do find that while I thought the key words were rather specific, the searches in general returned approximately 60 per cent non-applicable topics. In spite of the fact that some of the searches returned a majority of information which, at this time, is not useful they all had a significant portion which has had substantial impact upon our program. As an example, a NASA scattering chamber may very well be, in modified form, a part of our new product line to be announced in May, 1974. Exchange of technology is the only way we, as a small company, can keep from re-inventing the wheel and these information searches have taught me to look first at the available technology prior to putting on the inventor's cap.

Secondly, the response of people who are personally contacted to provide technical assistance on specific problems has been over-

P.O. BOX 30041 • ALBUQUERQUE, NEW MEXICO 87110 • PHONE: (505) 294-0897

whelming. I particularly mention Mr. Filmer Ruegg at the National Bureau of Standards for his kind assistance on flow measurement. Here is a man at the head of his field whom I would never have known had it not been for your tireless efforts and seemingly infinite contacts. Through his comments and recommendations we now have a strong capability and knowledge in our specific flow measurement problem.

Finally, I would like to speak to your specific program. For over 15 years I have been aware of a certain negative attitude on the part of the business community toward the Small Business Administration. This attitude primarily centers itself on the financial portion of the SBA program which for some time, I might add, I shared with the community. Also earlier technology utilization programs such as the NASA Computer Retrieval, e.g. Technology Applications Center at the University of New Mexico, provided a search at a prohibitive cost to the small businessman. When I say small I allude to the person like myself who may be doing well to draw enough money from the company to pay the rent at home. $250 for an information search would be totally out of the question unless substantial sales could be guaranteed which can never be the case. Your office is the first contact that I have ever developed which genuinely helps at, I am sure, considerable expense and for which I have never been forced to expend any money save the price of applicable documents beyond that which you could supply. Your efforts have changed my attitude and I proudly proclaim your service and accomplishments to my colleagues.

Your program is in fact a vital portion of the Small Business Administration program and furthermore is the only avenue at my disposal for reaching the answers to so many questions. If the federal government can bail out Lockheed Corporation from bankruptcy and cost plus fund the major corporations in all manner of joyful pursuits of knowledge and profit, it can certainly afford the relative pittance it spends on your program as one of the most cost effective investments this country can make.

Thank you again for your support.

Very truly yours,

F.T. WILLIAMS
FRONTIER ENTERPRISES, INC.

FTW/jp

cc: Frank G. Mitchell, Chief
SBA, Region VI - PMA

Durant (Okla.) Daily Democrat, Thursday, Feb. 7, 1974. Page

Will Meet EPA Standards. . .

City Waste-Water System A First

(EDITOR'S NOTE: Dr. Frank Wade's idea — and those big ponds dug by Okmulgee National Guardsmen near the city sewer plant last month — are beginning to gain wide recognition. The following was moved by United Press International on its state wire this morning).

DURANT (UPI)— At a time when most towns and cities in the United States are spending more money to get rid of their waste water than to provide fresh water for their citizens, an Oklahoma college professor has come up with a way to reverse this trend.

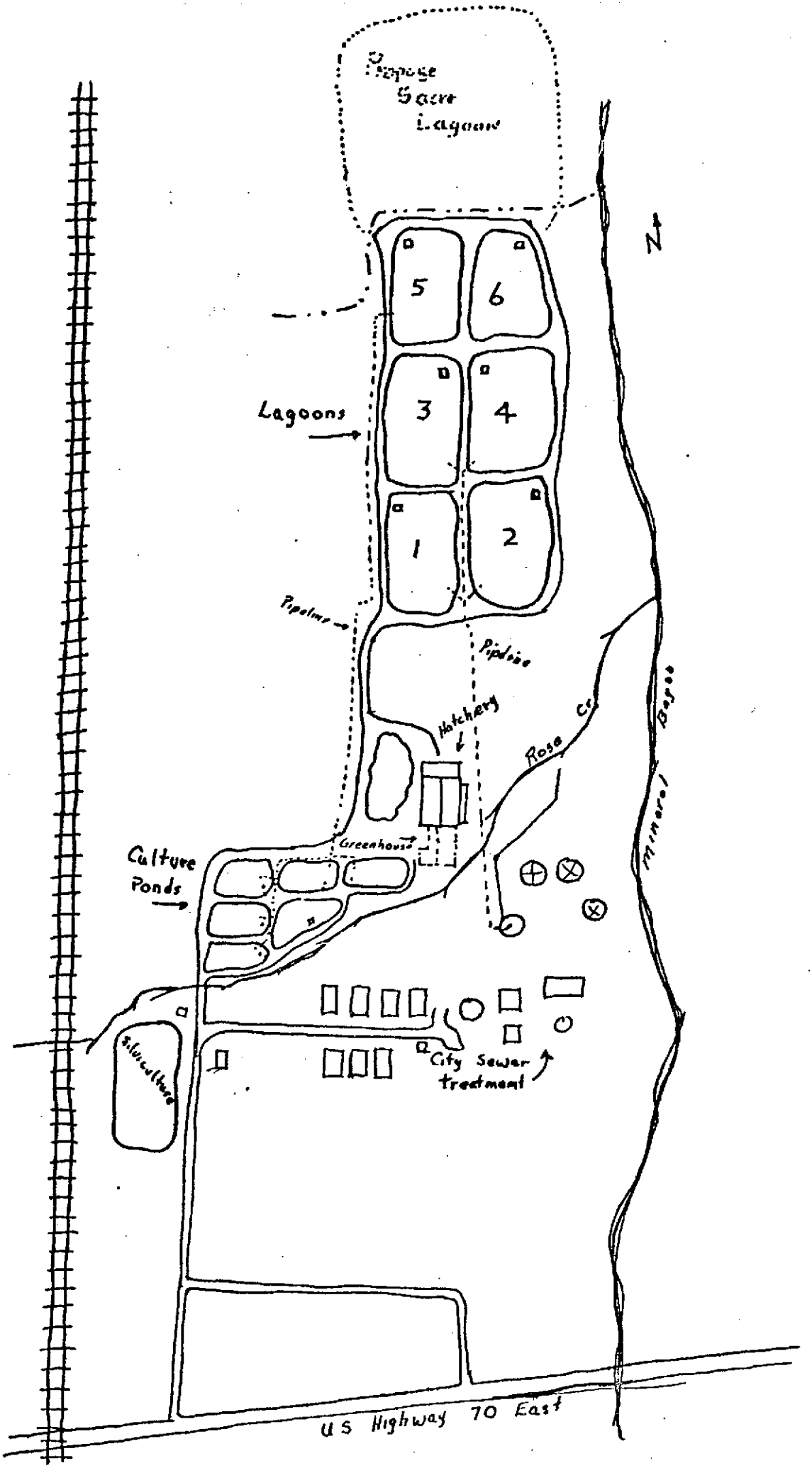
Dr. Frank Wade, biology professor at Southeastern State College in Durant, has adapted a little-known German water sewage treatment program to American standards. And he claims it will give any city or town in the U.S. that adopts it an operation to meet Environmental Protection Agency standards that go into effect in 1976.

The system, created a quarter of a century ago in Munich, Germany, enables a city to add a multi-pond lagoon system to its existing primary and secondary sewage treatment facilities. By taking the water that has been through the chlorination and filtration process and running it through the lagoon ponds, the end result is potable water — a 1976 EPA requirement.

The secret of the lagoon system is the stocking of the ponds with rough fish, including carp, suckers, catfish, minnows, shad, crawfish and fresh water mussel.

Not only is the addition of the lagoon system inexpensive, but cities can sell minnows and crawfish to wholesale bait dealers, and once a year drain down their ponds and sell the protein fish to pet food manufacturers.

As an added attraction for Wade, he can use biology juniors and seniors in the operation.


Proposed Secret Lagoon
N
5
6
Lagoons
3
4
1
2
Pipeline
Pipeline
Hatchery
Rose Cr
Mineral Bayou
Greenhouse
Culture Ponds
Silo
City Sewer treatment
US Highway 70 East

Durant Sewage Program

DURANT — Reverse inflation has provided the city of Durant with a reclaiming sewage system that will meet the 1976 Environmental Protection Act standards at a ridiculously low price.

Dr. Frank Wade, associate professor of the biology department at Southeastern State college, said the value of the completed water sewage treating plant is around half a million dollars. The actual cash outlay by the city of Durant won't top one-thousand dollars by much.

How can this happen?

First of all, it was a college biology project patterned after similarly successful European ventures. The system in Durant is identical to the one created 25 years ago in Munich, Germany.

"It is a multi-pond lagoon system that takes the solid wasts and effectively treats them so that the water that ultimately is dumped into streams and rivers is much less than the 5 B.O.D. (Biochemical Oxygen Demand) that the new EDA law required," explained William G. (Bill) Dodd, industrialist specialist with the Technology Use Studies Center at Southeastern.

Dodd explained that the normal primary-secondary water quality would exceed 250 BOD when it hits the lagoon system. "This system that Dr. Wade has installed utilizes rough fish and aquatic plants to equate this."

The six lagoons are completed and Johns-Manville Co. of Denison worked out a deal with the college through a "mutually benefical financial árrangement" to supply 1,500 feet of four inch pipe and 600 feet of eight inch pipe required to put the program into operation.

One of the key assists in the program came at the outset when the Oklahaoma National Guard conducted its summer camp at the lagoon site and used the NG equipment to dig the lagoons.

Normally, the Guard would dig underground fuel tanks during their summer maneuvers. By coming to Durant, they shortened their trip served a community prupose, and reduced their normal summer camp expenses by fully $5,000.

Dr. Wade said the wastewater reclamation system is so constructed that the transfer of water is accomplished by gravity flow.

"Our students installed the lagoon connecting pipes and control valves," Dr. Wade said. "We now have 8.5 million gallons of impounded sewege water. The system was filled with secondary effluent water by using borrowed irrigation equipment. However, now that the Denison Johns-Manville plant has provided us with the piping and fittings required, we'll shortly be operating a full efficiency."

Dr. Wade says the Durant project "should be just a pilot project for municipalities having a population of 15,000 and under. The overwhelming cost of a properly engineered and equipped water treatment plant is simply beyond the budgetary constraints of a small community," he declared.

"As you know, the past approach to the problem has been to release effluents into a stream or river then hope for dilution. It has not worked and is getting worse with the passage of time," he declared. "In fact, the new EPA Standards will not allow it to continue."

Since virtually all water treatment systems today that are in the research stage are multi-million dollar projects, Dr. Wade declared that "what we are doing in Durant stands out like a lighthouse today."

Dr. Wade said graduate assistants can help in the operation and toward this end, through the support of Southeastern's TUSC, efforts are being directed at both the federal Division of Environmental Systems and Resources, and the National Science Foundation to get student aide grants.

"This project could develop into a center for the training of personnel who are or will become wastewater treatment specialists," Dr. Wade said.

And as another side benefit, minnows, crawfish, catfish, shad, carp, suckers and fresh water mussels used in the project can be sold. The minnows and crawfish to bait dealers and the protein fish to pet food manufacturers.

Durant's Lagoon sewer system has the ponds filled and is working today.

THE DENISON HERALD — Denison, Texas, Wednesday, May 8, 1974

The FORUM

By JOHN CRAWFORD

DAVE FRENCH, manager of Johns-Manville's Transite pipe company in Denison, calls it "corporate concern."

DR. LEON HIBBS, president of Southeastern State college, calls it "a most generous contribution."

But whatever you want to call it, the two institutions worked out a deal for some 2,100 feet of pipe for a non-pressure system to be used in the new experimental sewer plant being built for Durant's use.

It seems that J-M supplied the pipe and the college bought the necessary connections.

"Anything we can do to improve the environment, is reason enough for our participation," said French.

APPENDIX D

GENERAL AVIATION TECHNICAL NEWS LETTER

APPENDIX D

GENERAL AVIATION TECHNICAL NEWS LETTER

As previously mentioned on pages 12-13, TUSC enthusiastically accepted a new and different approach toward Technology Utilization which is to disseminate aviation/aerospace information via the vehicle of a General Aviation Technical News Letter.

Following a survey of general aviation enthusiasts, approximately 300 written inquiries were mailed to airport operators, airport planners, aviation educators, state aeronautic commissions, etc. By the end of the contract year, our mailing list had grown to 420 recipients. Readers of the News Letter have responded most favorably. Not knowing what reaction to expect, the Center has been selective and somewhat cautious in developing the mailing list. However, we are now confident that within the next six months the Center should have little difficulty in identifying readers of the News Letter and be able to very closely define their areas of interest.

Admittedly, this medium of information dissemination is slanted to give exposure to the first "A" in NASA's official name; i.e., Aeronautics. More specifically the News Letter addressess itself to General Aviation--that sector of the aviation community where the greatest number of people, having interests in aeronautics, are to be found.

The Editor of the publication, Mr. A. M. Moore, Senior Industrial Specialist has a long and varied background in aviation.

He served many years as an aircraft company technical representative; thus, he has a natural feel for the various technological innovations and/or problems of interest to the average general aviation-minded person. He personally visited the Flight Research Center at Edwards AFB to discuss ways to present articles that have appeared in the News Letter. Also, he has queried personnel at both the Flight Research Center and Langley Research Center in numerous telephone conversations. These contacts have also been coordinated with NASA's General Aviation Technology Office. TUSC gratefully acknowledges the full and invaluable assistance provided by NASA and the various Research Centers.

Faculty personnel in the Physical Science Department, having specialities and expertise in various technical areas, are also extremely cooperative in providing a source of original authorship.

Five publications of the News Letter were accomplished during the contract year. Thus, if continued, the frequency in distribution of this medium of information dissemination should be on a bimonthly or trimonthly basis. The Center has received approximately 275 formal responses to the mailing-list survey mentioned. TUSC offered its search service to readers as an item of information in the last News Letter; i.e.,

Search Service Offered Readers

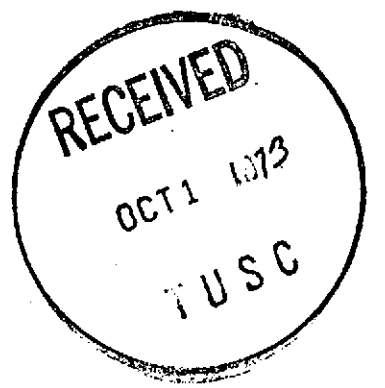
> The reader response to this General Aviation Technical News Letter has been most gratifying. We have been surprised by the number of requests for additional information concerning items reported in the Letter. Most of the requests have been for specific information that would be of interest to a very narrow audience. In view of these queries, the Technology Use Studies Center is offering its literature search capability as a service to General Aviation personnel.
>
> If you have a problem in airport planning, aircraft, navigation, etc., TUSC will conduct a survey of the literature pertaining to your problem or area of interest. If we

find reports which are in the area of your interest, we will mail abstracts of the reports to you. There are approximately 900,000 items in the NASA data bank which we search, and there will likely be reports pertinent to your needs. This search service is provided to you without cost; the reports you order (if any) will cost you about $3.00 each.

The following correspondence provides a sample illustration of the interest that has been stimulated by the News Letter.

DEPARTMENT OF AERONAUTICS
NEBRASKA AERONAUTICS COMMISSION

STATE OF NEBRASKA
DIRECTOR OF AERONAUTICS



September 26, 1973

Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Gentlemen:

Please add us to your mailing list for your General Aviation Technical News Letters.

Thank you.

Sincerely,

DEPARTMENT OF AERONAUTICS

John R. Auer
Deputy Director of Operations

JRA:lb

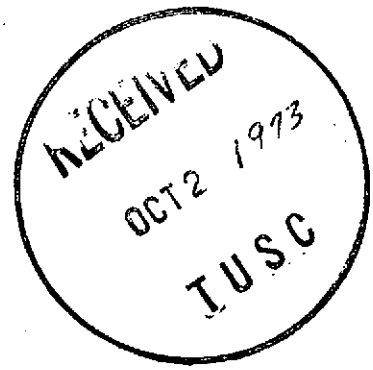
MAIN OFFICE — LINCOLN
GENERAL AVIATION BUILDING, LINCOLN MUNICIPAL AIRPORT
MAIL ADDRESS: P. O. BOX 82088, LINCOLN, NE. 68501
TELEPHONE: (402) 471-2371

NAV-AIDS OFFICE — KEARNEY
TERMINAL BUILDING, KEARNEY MUNICIPAL AIRPORT
MAIL ADDRESS: P. O. BOX 397, KEARNEY, NE. 68847
TELEPHONE: (308) 237-5272

STATE OF CALIFORNIA—BUSINESS AND TRANSPORTATION AGENCY

66
RONALD REAGAN, Governor

DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS
EXECUTIVE AIRPORT
SACRAMENTO, CALIFORNIA 95822



SEP 26 1973

Mr. A. M. Moore
Editor - TUSC News
Southeastern College
Durant, Oklahoma 74701

Dear Mr. Moore:

May we please request that this office be put on the mailing list for the TUSC News. The address should be as follows:

California Department of Transportation
Division of Aeronautics
Sacramento Executive Airport
Sacramento, California 95822

We thank you for the offer to place our name on your mailing list.

Sincerely,

WILLIAM F. SHEA
Chief

Loren R. Jones
Administrative Officer

LRJ:bjn

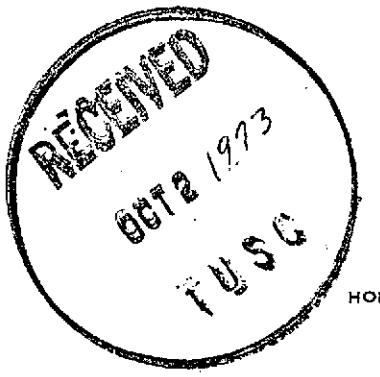
JOHN A. BURNS
GOVERNOR

67

E. ALVEY WRIGHT
DIRECTOR

LAWRENCE F. O. CHUN
DEPUTY DIRECTOR

MUNNY Y. M. LEE
DEPUTY DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

IN REPLY REFER TO:
AIR 8990

September 27, 1973

Mr. A. M. Moore
Editor
The TUSC News
Southeastern State College
Durant, Oklahoma 74701

Dear Mr. Moore:

Thank you for your letter of September 1, 1973.

Yes, I would appreciate being placed on your mailing list to receive the General Aviation Technical News Letter.

Very truly yours,

OWEN MIYAMOTO
Chief, Airports Division

DARWIN D. GRANT, ST. JOHNS
CHAIRMAN

ALBERT M. CRAWFORD, JR., PRESCOTT
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MEMBER

Arizona Department of Aeronautics

JACK WILLIAMS
GOVERNOR

58
JAMES VERCELLINO
DIRECTOR

3000 SKY HARBOR BLVD.
PHOENIX, ARIZONA 85034

PHONE 271-4049

RECEIVED
OCT 4 1973
TUSC

October 1, 1973

The TUSC News
Southeastern State College
Durant, Oklahoma 74701

Gentlemen:

Please place our name on your mailing list to receive your publications. Mail all publications to the address contained in the letterhead of this correspondence.

Sincerely,

JAMES VERCELLINO
Director

JV:pck

STATE OF ILLINOIS
DEPARTMENT OF AERONAUTICS
SPRINGFIELD
62705

Guy Wood
~~EXECUTIVE~~ DIRECTOR

Bob Morrison
~~RAY ANDERSON~~ ASSISTANT DIRECTOR

October 2, 1973

Technology Use Studies Center
SOUTHEASTERN STATE COLLEGE
Durant, Oklahoma 74701

Gentlemen:

I would very much like to be placed on the mailing list to receive the General Aviation Technical Newsletters. This organization is engaged in a wide-ranging educational effort for Illinois general aviation airmen. Our intent is to achieve a higher level of safety through better educated airmen.

Very truly yours,

Eugene C. Utz
Flight Safety Coordinator

Texas Aeronautics Commission

POST OFFICE BOX 12607, CAPITOL STATION, AUSTIN 78711 / (512) 475-4768

October 3, 1973

The TUSC News
General Aviation-Technical Edition
Technology Use Studies Center
Southeastern State College,
Durant, Oklahoma 74701

Gentlemen:

Your Newsletter Vol.1, No. 1 was of great interest to us. We do wish to continue to receive this publication.

Please send us one copy each of the following publications described therein.

STUDY OF AIRCRAFT IN SHORT HAUL TRANSPORTATION SYSTEMS. N67-38582.

OPTIMUM RUNWAY ORIENTATION RELATIVE TO CROSSWINDS. N72-30250

SERVICE TO SMALL OOMMUNITIES. Parts 1 and 2. N72-31016 and N72-31017.

Thank you.

Sincerely,

Joy Fish

(Mrs.) Joy T. Fish
Librarian

Rex C. Cauble, Chairman; Lucien Flournoy, Vice-Chairman; James Luther, Secretary
Paul M. Fulks, Sr.; C. T. Matthew; David Witts

WM. H. CHAMPLIN, JR., ROCHESTER
CHAIRMAN
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COMMISSIONERS

JOHN R. SWEENEY
DIRECTOR

NEW HAMPSHIRE AERONAUTICS COMMISSION

MUNICIPAL AIRPORT
CONCORD, N.H. 03301

October 5, 1973

Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Dear Editor Moore:

We would like to receive the TUSC News. Please send copies to:

John R. Sweeney, Director
New Hampshire Aeronautics Commission
Concord Municipal Airport
Concord, N.H. 03301

Sincerely yours,

P. J. Dwyer
Aviation Analyst

PJD:db

RECEIVED
OCT 9 1973
TUSC

A DIVISION OF R. H. SIEGFRIED, INC.
510 SOUTH LANSING • POST OFFICE BOX 3365 • TULSA, OKLAHOMA 74120
CABLE ADDRESS: NORDAM – TULSA, OKLAHOMA
PHONE (918) 587-4105
TELEX NO. 49-2377

October 16, 1973

Technology Use Studies Center
Southeastern State College
Durant, Oklahoma

ATTENTION: A. M. Moore

Dear Mr. Moore:

Your letter of 1 Sept, 1973 stated that Volume I, Number 1, of the General Aviation Technical News Letter was attached thereto. We did not receive the News Letter and are very interested in reviewing it.

If at all possible, please forward a copy of the News Letter to the attention of the undersigned at the address given above. We are actively engaged in producing composites and sandwich structures for the air line industry. We would be interested in receiving data pertinant to our field as they become available in the future.

Thank you,

NORDAM

DBK

D. B. Keith
Senior Design Engineer

DBK:bb

RECEIVED
OCT 18 1973
TUSC

Illinois Department of Transportation
Capitol Airport North Walnut Street Road Springfield Illinois 62705

Division of Aeronautics

October 16, 1973

Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Gentlemen:

We have received Volume #1 of the General Aviation Technical Edition news letter which you publish and would like our name to be added to receive future publications in this series.

Very truly yours,

Mark A. Cooper

Mark A. Cooper
Chief of Safety

For: Guy Wood
Director

GW:MAC:js

STATE OF IDAHO

CECIL D. ANDRUS, GOVERNOR

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DARRELL V. MANNING, DIRECTOR
MUNICIPAL AIRPORT
3103 AIRPORT WAY
BOISE, IDAHO 83705
208 / 384-3183

DEPARTMENT OF AERONAUTICS

25 October 1973

Rec'd 10-29-73

The TUSC News
Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Dear Sir:

I would like to receive your General Aviation Technical News Letters as described in your letter of September 1, 1973.

Please send them to :

Larry D. Mathison, S.I.T.
Idaho Department of Aeronautics
3103 Airport Way
Boise, ID 83705

Thank you.

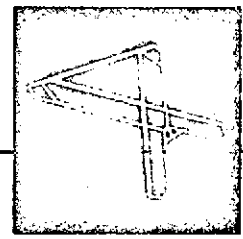
Sincerely,

Larry D. Mathison

Institute of Aviation

UNIVERSITY OF ILLINOIS

318 Engineering Hall
Urbana, Illinois 61801



24 January 1974

Technology Use Studies Center
Southeastern State College
Durant, Okla 74701

Gentlemen:

I would appreciate being placed on your mailing list to receive copies of the TUSC News, General Aviation-Technical Edition as these become available. A copy of Vol.1, No.1 and Vol.1, No.2 would also be appreciated.

Sincerely,

T.W. Emanuel
Ground School Supervisor

TWE/lt

Sent No.1 + No.2

RECEIVED
JAN 28 1974
T. U. S. C.

MEMO
FROM – R. P. WADELL

To: Gentlemen –

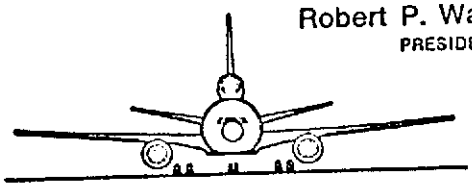
Having heard of your activities, we would appreciate being on your mailing list for aviation related literature, including recent back issues such as "General Aviation – Technical Edition" Vol 1 #5

Thank you –

R P Wadell

Reid
4-18-74

Robert P. Wadell, P.E.
PRESIDENT



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350 MAINSAIL COURT • FOSTER CITY, CALIF. 94404 • (415) 345-6623

3509 Greenflint Lane
Austin, Texas 78759
April 18, 1974

The TUSC News
Technology Use Studies Ctr
Southeastern State College
Durant, Oklahoma 74701

Gentlemen:

The offer you made in the April issue of your most excellent publication is unresistible. I make reference, of course to the Search Service which you are offering your readers.

I am gathering data and practical information on the construction, use and installation of spoilers in small aircraft. I would appreciate any information you might find on this subject.

Until recently spoilers have been used almost exclusively on sailplanes and are rare in powered aircraft. I realize that most large transports and some military aircraft use spoilers but my interest is in the application of the spoilers in small aircraft at speeds something less than those capable with jet engines.

Thank you in advance. It is a fine publication you have and I do hope that a considerable portion of your future issues will concern light aircraft.

Sincerely yours,

Tony Bingelis

Antoni Bingelis

Search written upon this request 22 April - AM